

(Textile Engineering Department)

Undergraduate

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**Course Title: Nonwoven Fabrics**

**Prerequisite:** Fiber Science

**Number of Credits: 2**

**Lecturer: Dr. Hoseini Varkiani**

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**Course Topics:**

- Introduction to the course references, The History of nonwoven, Advantages and Disadvantages of nonwoven
  - Different methods of producing nonwoven and providing a variety of produced samples
  - Comparison of nonwoven fabrics with traditional textiles and its production statistics and trends in the development and production of these fabrics in the world and all types of fibers used in nonwoven
  - Uses of nonwoven fabrics as disposable (hygiene, medical, wipes, etc.) and durable (shoe and leather goods, interlining, agriculture, geotextile, insulation, filters, etc.
  - Layering Methods, Fiber orientation Explained and its Types, and Fiber orientation Measurement Methods
  - (Layer preparation method by carding and preparation of random layers by carding (random roller, static method and air flow
  - Different methods of layering (crosslapping) advantages of these layers and related calculations
  - Methods for providing random layers using airlay
  - Preparation of voluminous bulky layers by carding and airlay
  - Types of bonding methods(mechanical-thermal-chemical) and explanation of different parts of a needle punching machine
  - Effective parameters in needling, characteristics of needle punching layers and related diagrams
  - Types of needles used for needle punching and the characteristics of needles used and punching force and the factors affecting it
  - Preparation of the layer by spunlacing method and its characteristics and comparison of the needle punching and spunlacing layers and effective parameters on spunlacing layers
  - Preparation of the layer by thermal bonding method and explanation of different methods (Calender - Hot Air - Ultrasonic - Infrared) and their characteristics
  - Preparation of the layer by chemical bonding method and explanation of different methods (saturation - printing - spraying - foam) and their properties
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**Reading Resources:**

- Nonwoven Fabrics
- Handbook of Nonwoven